

Spot Safety Project Evaluation

Project Information

Order ID: 41000028083

Project ID: 11-04-204

Location: NC 105 at Wilson Drive (non-system)

County: Watauga

City: Boone

Division: 11

Signal ID: 11-0062

Countermeasure: Install Right Turn Lane for NB NC 105 at Wilson Drive and Revise Traffic Signal.

Project Completion: January 14, 2009

Project Cost: \$71,000

Map and Aerial (from Google Maps, Google Coordinates are -- 36.203495,-81.672551)



Naive Before and After Analysis

- Before Period: August 1, 2003 through September 30, 2008 (5 years, 2 months)
- Const. Period: October 1, 2008 through January 31, 2009
- After Period: February 1, 2009 through March 31, 2014 (5 years, 2 months)
- Analysis Criteria: Treatment data consisted of all crashes within 150 feet of the subject intersection for the NC 105 and Wilson Dr approaches.
- Target Crashes: Target 1 -Frontal Impact Crashes. Please note that Frontal Impact Crashes were the target crashes for the applied countermeasure. Frontal Impact crashes include: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

Target 2- Rear end Collisions on the NB NC 105 Approach.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	51	74	+ 31.1 %
Total Severity Index	1.73	2.50	+ 30.8 %
Target 1 Crashes	16	20	+ 25.0 %
Target 1 Crash Severity Index	1.46	4.33	+ 196.6 %
Target 2 Crashes	9	16	+ 77.7 %
Target 2 Crash Severity Index	3.47	1.93	- 44.4 %
Volume (2006, 2011)	29,500	27,000	- 8.5 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	0	0	N/A
Class B injury Crashes	4	6	+ 50.0 %
Class C Injury Crashes	4	9	+ 125.0 %
Property Damage Only	46	59	+ 28.3 %

<u>Additional Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Left Turn, Same Roadway (Target 1)	6	13	+ 116.7 %
NB NC 105 Rear End Crashes (Target 2)	9	16	+ 77.7 %
Left Turn, Different Roadway (Target 1)	4	2	- 50.0 %
Rear End Crashes on Wilson Dr Approach	9	5	- 44.4 %
Side Swipe Crashes from Wilson Dr to SB NC 105	4	3	- 25.0 %
Crashes at Sagebrush PVA Drive on Wilson Dr	10	13	+ 30.0 %

Overall Summary Results

Total Crashes:	+ 31 %	(increase)
Total Crash Severity:	+ 31 %	(increase)
Target 1 Crashes:	+ 25 %	(increase)
Target 1 Crash Severity:	+ 197 %	(increase)
Target 2 Crashes:	+ 78 %	(increase)
Target 2 Crash Severity:	- 44 %	(reduction)
Volume:	- 9 %	(reduction)

Additional Summary Results

Left Turn, Same Roadway (Target 1):	+ 116 %	(increase)
NB NC 105 Rear End Crashes (Target 2):	+ 78 %	(increase)
Sagebrush PVA Drive on Wilson Dr:	+ 30.0 %	(increase)

Items for Discussion/Concerns

The NB NC 105 approach had an increase of rear end crashes from the before period to the after period (9 to 16 crashes). In the before period there were 6 rear end crashes that occurred in the outermost lane on NB NC 105. In the after period there were 2 rear end crashes in the NB NC 105 right turn lane.

The intersection experienced an increase of left turn, same roadway crashes occurring on NC 105 (6 to 13 crashes). Additionally, there was an increase in severity of the left turn, same roadway crashes in the after period. There were no injury left turn, same roadway crashes in the before period, and 7 injury left turn, same roadway crashes in the after period.

In the “Additional Information” table, a line item was added for crashes at the Sagebrush PVA Drive entrance from Wilson Drive. This driveway is located approximately 400 feet from the subject intersection. Since this driveway is located outside of the standard 150 feet study area, these crashes were not included on the collision diagrams or within the “Treatment Information” crash summary table.

Data Prepared For

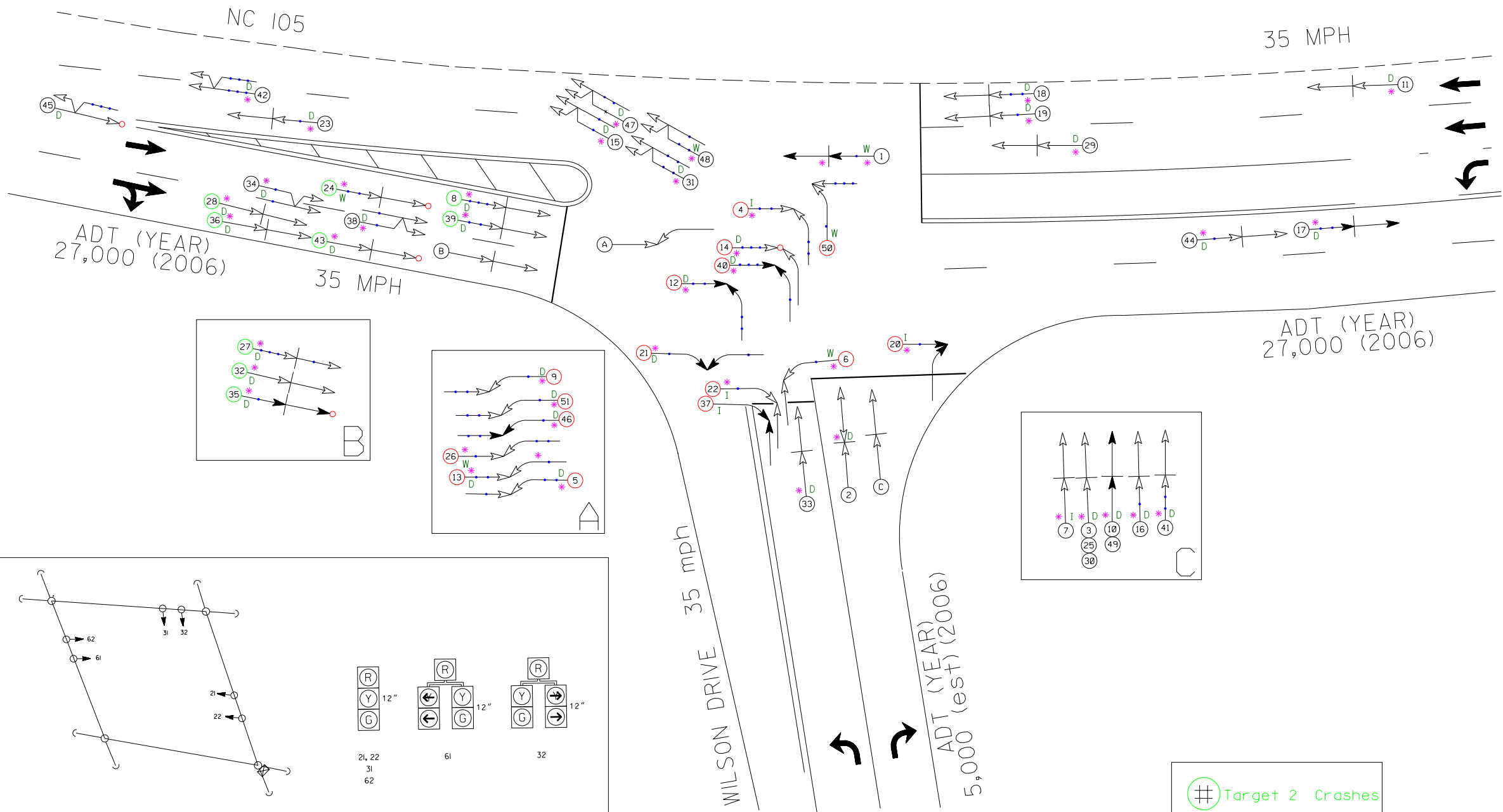
The Traffic Safety Unit *of the*
Transportation Mobility and Safety Division *of the*
Division of Highways *of the*
North Carolina Department of Transportation

Data Prepared By

Principal Investigator:	Elizabeth Scott, EI
Work Group/Consultant:	Stantec Consulting Services Inc.
Date:	June 5, 2014

SS# 11-04-204
Order#410000028083
Watauga County
Before Period
9/1/04 - 4/30/09

LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
	DAYLIGHT CRASH		10 MPH TO 19
	NIGHT CRASH		20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			A ANIMAL
			P PEDESTRIAN
			B BICYCLE
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O Other



SIGNAL I.D.: 11-0062

Target 2 Crashes

Target 1 Crashes

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION

Date: 6/6/2014

Prepared By: ESS



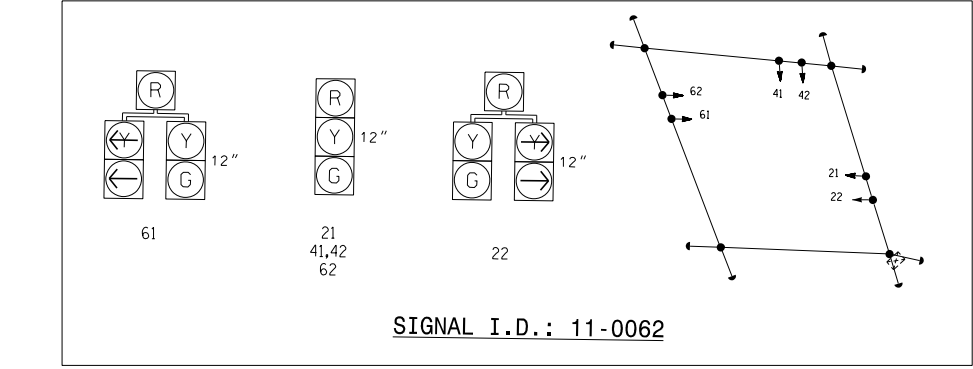
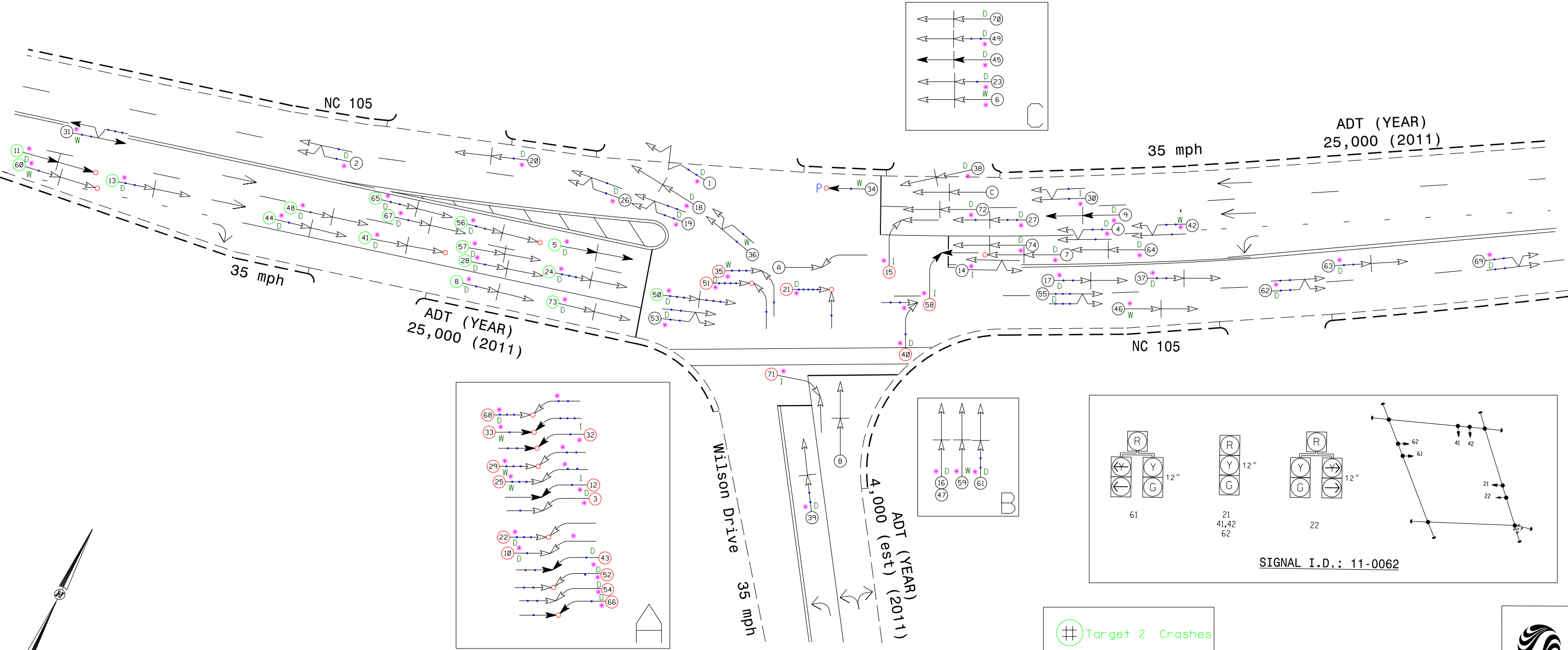
Stantec

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* Crash 47 shown as a side swipe as this was the movement that caused Vehicle 1 to depart the roadway

SS# 11-04-204
Order#410000028083
Watauga County
After Period
8/1/09 - 3/31/14

LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
	REAR END		FATALITY
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Target 2 Crashes

Target 1 Crashes

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